

*An Account of some Books.*I. FREE CONSIDERATIONS *about* SUBORDINATE FORMS, *by the Honourable* ROBERT BOYLE.

THIS Tract is an *Appendix* to the Noble Author's *Examen of Substantial Forms*, published last year, and reprinted this. There hath been already given an Account of the principal Part, as appears by *Numb. 11*. 'Tis very fit the like should be done now of this considerable *Appendix*:

First then it clears up and states the Doctrine about *Subordinate Forms*, as it is maintain'd by divers learned *Moderns*, especially *Sennertus*, who teacheth, that besides the *Specifick Form*, (so called by him) there may reside in Animals and Plants, certain other Forms, so subject to the predominant *Mistress-Form*, that they deserve the Title but of *Subordinate Forms*, and during the Reign of the *Specifick*, are subservient to it; yet when *that* is deposed or abolisht, these *Inferiour Forms* may come to set up for themselves, *viz.*

This done, the Author tryes, whether the *Phænomena* and Effects of these pretended *Subordinate Forms* may not be as well as the principal ones, intelligibly explicated by the *Mechanical Principles*, *vid. Matter and Motion*, and the thence resulting *Shape and Texture*. Which that it may be done, is so happily made out in this *Tract*, that a Rational Unprejudiced and Attentive Reader cannot but embrace the *Author's* Doctrine, and, according to it, be satisfied, that the portions of Matter, that are endowed with these pretended *Subordinate Forms*, cannot pay the presumed *Superintendent Form* any other obedience, than some such kind of one, as the parts of a *Clock* or *Engine* may be said to yield to one another. So that the whole matter may be well conceived to be nothing but this; That, when divers bodies of differing natures or *Schematisms* come to be associated so as to compose a Body of one denomination, though each of them be supposed to act according to its own peculiar nature, yet by reason of the coaptation of those parts, and the contrivement of the compounded Body, it will many times happen, that the
Action

action or effect produced, will be of a *mixed* nature, and differing from that, which several of the parts consider'd as *distinct* Bodies or Agents, tended to, or would have perform'd ; As when in a Ballance, by putting in a weight into one of the Scales, the opposite Scale, though as a heavy body it will naturally tend downwards, yet by vertue of the fabrick of the Instrument is made to mount upwards. So that those Actions, which Scholastical men attribute to the conspiring of subordinate *Forms* to assist the *Specifick*, are but the resultant actions of several Bodies, which being associated together, are thereby reduced in many cases to act jointly, and mutually modify each others actions ; and that which they ascribe to the dominion of the *Presiding* Form, is to be imputed to the structure and connexion of the parts of the compound-body.

This the Author confirms and illustrates by many very instructive Examples and Comparisons, taken from manual Arts and Practises, Physicks, Chymistry, &c. And applying his doctrine about these *subordinate Forms* to inanimate Bodies, he sums up the heads of all, and casts them into 9 distinct Propositions, which are

1. The word *Form* is of an interminate signification.
2. 'Tis not easie, to decide the *Nobleness* of Forms.
3. In divers Bodies the Form is attributed upon the account of some eminent *Property* or *Use* ; which if it be present and continue, though many other things supervene, or chance to be wanting, the matter is nevertheless lookt upon, as retaining its Form, and is wont to be allow'd its usual denomination.
4. By reason of the Conjunction or Connexion of the *parts*, that make up a *whole* (or, at least an Aggregate of Bodies, that for their connexion are looked upon as such) it will often happen, that several things will be perform'd by the joint or concurrent Action of these united or coherent parts.
5. We may yet in a *sound sense* admit, that in some Bodies there may be *subordinate Forms*.
6. The supervening of a new Form is often but accidental to the Pre-existent Form, and (*then*) does not at all destroy its nature but modify its operations.
7. Besides the *specifick* actions of a Body, that harbours *subordinate Forms*, there may be divers others, wherein some of the

Parts or Ingredients may act according to their particular and pristine nature.

8. In divers Bodies, that which is call'd or look'd upon as the *Specifick Form*, is often not so much as the *Presiding*, but only the *most eminent*.

9. The forms discours'd of, seem to be rather *concurrent*, than *subordinate*.

To each of these *Propositions* are annexed short *Comments*, full of very pertinent and teaching Instances, Relations, Comparisons, &c. for which the *Reader* is referred to the Book it self.

II. *Joh. SWAMMERDAM, M.D. Amsterodamensis de RESPIRATIONE & USU PULMONUM.*

THIS *Author* is of opinion, that all those Philosophers, who have hitherto inquired into the *Nature* and *Use* of *Respiration*, have only caught the shadow of it, nothing of the substance. And of this he gives this for the chief reason, because they have been too negligent in considering the first manifest motion of the Breast and Lungs in a *Fetus*; which particular being understood he thinks it very easie to judge of the Respiration of *born* Animals. He scruples not to reprehend the immortal Doctor *Harvey*, for having excluded from the office of the Lungs the use of *Refrigeration*; which he pretends to have asserted himself by most evident Experiments, and uncontrollable Reasons.

To represent distinctly, what he undertakes to make out in this *Traкт*, we may take notice of these particulars.

1. He takes pains to refute the Doctrine of *Attraction*, and to substitute in its place the Doctrine of *Pulsion* or *Intrusion* of Air into the Lungs.

2. He endeavours to assert, that the Lungs do not *fall down*, but are by the Breast *contracted*.

3. He affirms, to have clearly shew'd, what is the proper function and work of the *Diaphragme*, and other *Muscles* serving for Respiration.

4. He pretends, to have experimentally evinced the Genuine *Use* of *Respiration*, and the Benefit. thence resulting to the Animal Life.

In

In *ſhort*, He makes *Reſpiration* to be a Motion of the Thorax and Lungs, whereby the Air is ſometimes implled by the Noſe, Mouth and Wind-pipe into the Lungs; and thence again expelled; farther to elaborate the Blood, by *Refrigerating it*, and by ſeperating its *fuliginous ſteams*, and ſo raiſe it to its ultimate and higheſt perfection, for the Conſervation of the Life of Animals.

Notice may be taken here by the by, that this *Author* in his *Preface* promiſes the publiſhing of a *Treatiſe* about *Inſects*, in which he ingages to ſhew many wonderfull things in thoſe little and ſeemingly contemptible Creatures, and in particular to demonſtrate to the Eye the very method and manner how a *Caterpillar* is tranſmuted into a *Chryſalis* or *Aurelia*: By performing of which, he hop eth, he ſhall make the *Curious* bear more eaſily the loſs of Dr. *Harvey's* Treatiſe on that Subject.

III. *Observations faites ſur un GRAND POISON, & un LION, diſſéqués dans la Bibliotheque du Roy à Paris, le 24. & le 28. Juin, 1667,*

THis *Great Fiſh*, diſſected by the *Parisian* Philoſophers, was a *Vulpecula Marina* (a Sea-fox :) in which they obſerv'd;

Fiſt, The length of his Tail, equalling very near the whole length of the reſt of his body (the whole Fiſh being $8\frac{1}{2}$ feet long) and fashioned after the manner of a Sithe, bowed and turned up toward the belly.

Secondly, His *Mouth* was armed with two ſorts of Teeth; one ſort in the upper Jaw, being pointed, hard and firm, and of one only bone, in the manner of a *Saw*: the other ſort, found in the reſt of the upper, and in the whole under-Jaw, were moveable, and faſtned by fleſhly membranes.

Thirdly, His *Tongue* did altogether adhere to the lower Jaw, and its ſkin was hard and covered with little ſhining points, which rendred it very rough and ſcabrous one way. The points viewed with a Miſcroſcope, appeared tranſparent like Chryſtal.

Fourthly, His *Throat* was very large, and the *Oeſophagus*, as large as his Maw; concerning which Authors ſay, that he hath the dexterity of diſengaging himſelf from the ſwallowed hook, by caſting it up together with his Maw, the inſide of it turned out. They

found in his *Maw* the Sea-herb *Varec* 5 inches long, and a *Fish* of the like length without head, scales, skin and guts, all being wasted but the muscularous flesh, which remained entire.

Fifthly, The superior part of his *great Gut* had this peculiar, that instead of the usual circumvolutions of Guts, the cavity of this was divided transversly by many partitions, consisting of the membranes of the *Gut* turned inwards, and in the figure of a Vice, like Snail-shells, or winding Stairs.

Sixthly, His *Spleen* was double; his *Livèr* divided into two Lobes; the *Gall* found to have more of bitter than sower: the *Heart*, without a *Pericardium*, as big as a Hens egge; the *Head* almost nothing but a mass of flesh, very little Brains in it, and that which was there, having very few meanders or windings: the *Eyes*, bigger than those of an *Ox*, only half-spherical, flat before; the *Sclerotica* formed like a Cup, very thin, but very hard; the *Cornea* very tender and soft; the *ChrySTALLIN* perfectly spherical; the *Vaea* grayish; the *Chorodies* of the same colour and pierced, for the production of the *Retina*, by a very large hole: the bottom of this *Chorodies* had that lustre of Mother of Pearl, which is found in *Terrestrial Animals*, but with less vivid colours: and the *Retina* was also streaked with very apparent sanguineous Vessels.

The observables in the *Lyon* were,

In *General*, that for outward shape, and the constitution of many parts, as the *Claws*, *Teeth*, *Eyes*, *Tongue*, (besides the likeness of the *Viscera*) a *Lyon* resembles very much a *Cat*.

In *particular*, an admirable structure of his *Claws*; a peculiar shape and position of his *Teeth*; a very stiff *Neck*; a mighty rough and sharp *Tongue*, having points like claws both for hardness and shape, *Eyes* very clear and bright, even after death, which without closing the Eye-lids, *Lyons* can cover with a thick and blackish membrane, placed towards the great Angle, which by rising it self and reaching towards the small Angle, can extend it self over the whole *Cornea*, as tis in *Birds*, but especially in *Catts*: The reverse of the anterior *Uvea*, where it lies over the *ChrySTALLIN*, is altogether black: the *ChrySTALLIN* very flat, and its greatest convexity, which is not usual, in its anterior part, at tis in *Catts*: the *Aqueous* humour very plentiful, equalling almost the sixth part of the *Vitreous*, which plenty was judged to be the cause of the bright nets, that remains in the eyes after death.

His

His *Throat* was not above an Inch and a half large: the *Stomach*, 6 inches large, and 18 inches long: all the *Guts* 25 foot long: the *Liver*, divided into 7 *Lobes*, as in *Cats*; its cavity under the *Bladder of Gall* was full of Gall, shed abroad in the substance of the *Liver*, and of the neighbouring parts; which was suspected by the Physicians, administering this operation, to have been the cause of this *Lyons* death: the *Bladder or Gall* was 7 inches long, and $1\frac{1}{2}$ inch large, of a peculiar structure: the *Spleen*, a foot long, 2 inches large, and $\frac{1}{2}$ inch thick: the *Kidney* weighed somewhat above 7 ounces: the *Genitals* of a peculiar conformation, causing this Animal to cast his *Urine* backwards, and to couple like *Camels* and *Hares*.

His *Lungs* had 6 *Lobes* on the right side, and 3 on the left: the *Wind-pipe* had its annular Cartilages entire, excepting two or three; it was above four inches in compass, being very firme, and by this bgness and firmness enabling a *Lyon*, strongly to thrust Air enough through it, for his dread ful roaring.

His *Heart* was dry, and without water in the *Pericard*; much greater in proportion, than of any other Animal, between six inches long, and four inches large towards the *basis*, and terminating in a sharp point, It had very little flesh, and was all hollow; the *Ventricles* very large; the *Auricles* very small: the proportion of the branches, which the ascending *Aorta* casts out, was such, that the *Carotids* were as big, as the left *Subclavial* branch, and as the rest of the right *Subclavial*, whence they issue; Which is considerable, seeing the *Brain* is so small: For the *Brain* was but two inches big, of any dimension; the rest of the head being very fleshy, and consisting of very firm *Bones*. By comparing the little quantity of the *Lyons Brain* with the plenty of that of a *Calf*, it was Judged, that the having but little *Brain* is rather a mark and a cause of a fierce and cruel temper, than want of wit. Which conjecture was strengthened by the observation formerly made in the *Sea-Fox*, in whom almost no *Brains* was found, though it thought, that his craft and address hath occasioned men to give him that Name.

IV. HISTORIA AMBRÆ, *Authore* JUSTO KLO-BIO, D. in *Academ. Wittebergenfi.*

THIS Author reckons up 18 Opinions concerning *Ambergreese*, and having examined every one of them, he embraces that, which holds, That it is the *Dung* of a Bird, (called in the *Madagascar* Tongue *Afchibobuch* :) of which he gives the description out of *Odorotus Barbofa* and others; who affirm it to be of the bigness of a Goose, curiously feather'd, with a big head, well tufted. These Birds being found in great numbers in *Madagascar*, the *Maldives*, and other parts of *East-Indies*, are affirmed by *Authors* to flock together in great numbers, as Cranes; and frequenting high Cliffs near the Sea-side, and there voiding their Excrement, the Sea washes thence, if it fall not of it self, into it.

¶ There is another opinion among the said 18, for which the *Author* hath a good inclination, but yet dares not embrace it; *viz.* that 'tis the *Excrement* of a certain kind of *whales*. If this *Amber* were but in those other places, where there is good store of such *Whales*, it seems that would make the *Author* relinquish the former Opinion.

This puts us in mind of a *Relation*, to be met with in *Purchas*, which, giving an Account of a certain Commission for a Gentleman to go Factor into *Greenland* for the killing of *whales* and *Morses*, takes notice, among other Particulars, of a sort of Whale, called *Trompa*, having but one Trunk on his head, whereas the *Sarda*, another kind of Whales, hath two. This *Trompa* (saith that *Author*) hath teeth of a span long, and as thick as a mans Wrist, but no Fins. In his Head is the *Sperma Ceti*, saith he farther, and in his Entrails, the *Ambergreese*, being in shape and colour like *Cowes-dung*. Express order was given in the said Commission, that the person deputed should himself be present at the opening of this sort of Whale, and cause the residue of the said Entrails to be put in small Casks, and bring them along with him into *England*.

This will give occasion to increate our *Inquires* for *Greenland*; which perhaps may be inserted in the *Book* of the next Month.